

# Phase 6 Peer Reviews and Fatal Flaw Comments

Water Quality Goal Implementation Team  
June 26, 2017



**Chesapeake Bay Program**  
*Science, Restoration, Partnership*



# Midpoint Assessment Modeling Peer Reviews

Review Title/Topic	Status	Sponsor
Chesapeake Bay Scenario Builder/Nutrient Input Approach	Complete	Watershed Technical Workgroup
Proposed revised James River chlorophyll <i>a</i> water quality criteria (Part I)	Complete	Criteria Assessment Protocol Workgroup
(Part II)	Finalizing	
Phase 6 Chesapeake Bay Watershed Model	Finalizing (most) (Conowingo and climate change just starting)	Modeling Workgroup
Chesapeake Bay Water Quality/Sediment Transport Model (WQSTM)	In progress (awaiting CBP sensitivity testing & calibration)	Modeling Workgroup
Approach being taken to factor climate change considerations into the 2017 Midpoint Assessment	Request received	Climate Resiliency Workgroup

Source: Rachel Dixon and Bill Ball - CRC

# Phase 6 Chesapeake Bay Watershed Model



- **Review Charge:** Phase 6 is the most recent of a series of increasingly refined versions of the CBWM, and is a major departure from previous deterministic and mechanistic versions. The water quality simulation is an entirely new approach which relies on a structure based on multiple models. The panel is reviewing the Phase 6 Model with particular emphasis on the new multiple model aspects of the watershed simulation
- **Panel report (minus Conowingo and climate change) was provided to the CBP Modeling Workgroup on 12/2/16**

Reviewer	Affiliation
Zach Easton	VT, STAC
Don Scavia	U of Michigan
Doug Smith	USDA-ARS
Andrew Miller	UMBC, STAC
Peter Kleinman	USDA-ARS
Claire Welty	UMBC
Lawrence Band	UNC
Kathy Boomer	TNC, STAC
Rich Alexander	USGS
James Pizzuto	U of Del

Source: Rachel Dixon and Bill Ball - CRC

# Phase 6 Chesapeake Bay Watershed Model



- **Timeline:**
  - Convened panel for in-person meeting September 28, 2016.
  - Initial report (all questions except Conowingo & climate change) Dec. 2, 2016
  - Received part II (Conowingo and climate) June 1, 2017. Review panel will reconvene and complete review over the next month single final report will be distributed to the Partnership.
- **Status:** As of June 1 (with release of the draft Phase 6 model), received new documentation addressing simulation of Lower Susquehanna reservoirs (i.e. Conowingo) and an assessment of influence of climate change on water quality standards.
  - New reviewer brought on for Conowingo: James L. Martin (Mississippi State U.)
- **Next Steps:** When the final two questions are completed, a single final document will be prepared, sent to STAC for review, and formally distributed to the Partnership.
  - Final recommendations outlined may be subject to change when the remaining questions are considered

# Chesapeake Bay Water Quality/Sediment Transport Model (WQSTM)



**Review Charge:** The 2017 version of the WQSTM is the most recent of a series of coupled hydrodynamic and water quality models. New aspects include improved representation of the bioavailability of particulate organics and ability to simulate Conowingo infill and climate change in tidal waters. Refinements to the shallow water simulation include attenuation of nutrient/sediment loads through tidal wetlands, the representation of shoreline loads, and the explicit representation of oyster aquaculture, sanctuaries, and wild populations.

Source: Rachel Dixon and Bill Ball - CRC

Reviewer	Affiliation
Damian Brady	U of Maine
Joe DePinto	Limnotech (retired)
Marjy Friedrichs	VIMS, STAC
Tom Jordan	SERC
Dominic DiToro	U of Delaware
Steven Chapra	Tufts
Meng Xia	UMES
Matt Gray	UMCES Horn Point

# Chesapeake Bay Water Quality/Sediment Transport Model (WQSTM)



- **Timeline:**

- Convened panel for in-person meeting June 5-6, 2017
- Review in progress, deadline for review panel's findings mid-- July 2017.

- **Status:** Panel is working with Modeling Workgroup to gather additional sensitivity simulations and scenario runs after final calibration. Will then reconvene with webinar and conference calls.

Reviewer	Affiliation
Damian Brady	U of Maine
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# Phase 6 Completion Schedule

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Partnership's fatal flaw review of the Beta 6 modeling tools from June 1 through July 31, 2017

Fatal flaw issue resolution occurs in August, 2017

WQGIT revisits Midpoint Assessment schedule based on Beta 6 fatal flaw review period; August 14, 2017 WQGIT call

Partnership approval of Phase 6 modeling tools; September, 2017  
After fatal flaw review by partnership is completed.

"A fatal flaw may be the basis for the implementation of changes to the draft Phase 6 models. A fatal flaw is defined as a **significant** impediment, based on a weight of evidence approach, of the ability of the partnership to establish reasonable planning targets or evaluate progress toward achieving the planning targets or meet the conditions of EPA's "Interim Expectations for the Phase III Watershed Implementations Plans," dated January 19, 2017 (Expectations Document) due to:

- A calculation or method that does not follow the documented final decisions of the CBP partnership
- A calculation or method, or combinations thereof, that produce illogical results that result in significant impediment
- The omission of data submitted by the CBP partnership subject to established deadlines
- The overall failure of the model calibration to match observed flows and loads when compared to the level of performance in previous models"



# Review comments received so far:

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- VA – VA-specific high resolution data should be used in lieu of Ag Census acres for agriculture where possible - CBPO agrees; implementation simple; impact is medium
- MD – Biosolids data used was incorrect - CBPO agrees; implementation simple; impact miniscule
- MD/DE – Concern over Phosphorus Model and use of soil P data - CBPO does not agree; implementation impossible (without replacement of the model); impact significant, but unknown
- Many other non-fatal flaw comments received.
- WQGIT will ultimately decide if comments require changes.





# Phase III WIP planning target development

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- Draft Phase III WIP planning target development; August 1 – September 30, 2017.
- Key elements of No-Action Scenario, E3 Scenario and geo-isolation runs underway along with Conowingo infill and climate change analyses.
- Review of planning targets, Conowingo infill analysis, and climate change influence by WQGIT at September 25-26, 2017 meeting.
- Review of planning targets, Conowingo infill analysis, and climate change influence by PSC at October 2017 meeting.
- Release of draft Phase III WIP planning targets; October 31, 2017 - February 28, 2018 for partnership review.
- PSC approval of final Phase III WIP planning targets with special cases and release - March, 2018.